

WHAT IS CLAIMED IS:

1. 1. An aneurysm liner for treating an aneurysm in a parent vessel, the aneurysm liner comprising:

a liner sac made of an inelastic material having a sac and folded or pleated expansion zones, the sac, under ambient external pressure being expandable to a first peripheral dimension under influence of a first internal pressure and the expansion zones being expandable to a second, larger peripheral dimension, under influence of a second internal pressure greater than the first internal pressure.

2. The aneurysm liner of claim 1 wherein the one or more folded or pleated expansion zones are disposed on the liner sac and remain in an unexpanded configuration at the first internal pressure and assume an expanded configuration at the second internal pressure.

3. The aneurysm liner of claim 2 wherein the one or more expansion zones each comprise a pleated portion of the inelastic material folded upon itself in an accordion-like configuration and remaining folded under the first internal pressure.

4. The aneurysm liner of claim 3 wherein the folded portion unfolds when subjected to the second internal pressure.

5. The aneurysm liner of claim 4 wherein the liner sac is perforated to permeate blood from the aneurysm to the parent vessel.

6. An aneurysm liner, comprising:  
a structure having a proximal portion and a distal portion, the proximal portion and distal portion being configured to preferentially permeate embolics introduced therein through the distal portion.

7. The aneurysm liner of claim 6 wherein the distal portion has perforations sized to permeate embolics.

8. The aneurysm liner of claim 7 wherein the proximal portion has perforations sized to permeate blood but to inhibit permeation of embolics.

9. The aneurysm liner of claim 8 wherein the proximal portion comprises a liner portion supported by expandable struts.

10. The aneurysm liner of claim 9 wherein the distal portion is formed of the struts, free of any covering.

11. The aneurysm liner of claim 10 wherein the distal portion is comprised of a liner portion supported by the struts.

12. The aneurysm liner of claim 9 wherein the liner portion comprises a shape memory polymer material.

13. The aneurysm liner of claim 12 wherein the shape memory polymer is actuatable between a first low profile delivery configuration in which it confines the struts to a low profile configuration and a relaxed, expanded configuration.

14. An aneurysm treatment device, comprising:  
an expandable liner sac; and  
a retaining member within the liner sac, the retaining member releasably retaining therein a retained portion of the liner sac under a first internal pressure within the liner sac and releasing at least part of the retained portion under a second internal pressure, higher than the first pressure.

15. The aneurysm treatment device of claim 14 wherein the retaining member is oriented in the liner sac such that when the retained portion is released, it increases a deployed axial length of the liner sac.

16. The aneurysm treatment device of claim 14 wherein the retaining member comprises:

a coil disposed within the liner sac and  
having the retained portion of the  
liner sac tucked within an interior of  
the coil.

17. The aneurysm treatment device of claim 15 wherein the coil is configured such that when it releases the retained portion, the coil floats within the liner sac.

18. The aneurysm treatment device of claim 15 wherein the coil remains connected to the liner sac after it has released the retained portion of the liner sac.

19. An aneurysm treatment device, comprising:  
a sac configured to receive internal  
pressure therein and to increase a  
radial dimension thereof and decrease

an axial dimension thereof with increases in the internal pressure.

20. The aneurysm treatment device of claim 19 wherein the sac is formed of an axially oriented polymer material.

21. The aneurysm treatment device of claim 20 wherein the sac is releasably connected to an elongate delivery member.

22. The aneurysm treatment device of claim 19 wherein the sac is perforated.

23. The aneurysm treatment device of claim 19 wherein the sac has an expanded radial dimension sufficient to bridge a neck of an aneurysm.

24. An aneurysm treatment device, comprising:  
an elongate delivery member; and  
a liner formed of shape memory polymer material.

25. The aneurysm treatment device of claim 24 wherein the liner has a compressed, low profile configuration and a relaxed expanded configuration.

26. The aneurysm treatment device of claim 25 wherein the liner is configured to maintain its

compressed configuration during delivery to a treatment site and to assume the relaxed configuration upon being subjected to an elevated temperature above that during delivery.

27. The aneurysm treatment device of claim 24 wherein the liner comprises a mesh.

28. The aneurysm treatment device of claim 24 wherein the liner comprises a weave.

29. An aneurysm treatment device, comprising:  
an expandable liner having a medial portion  
formed of a fabric material and  
proximal and distal portions formed of  
a thin material relative to the fabric  
material in the medial portion.

30. The aneurysm treatment device of claim 29 wherein the proximal and distal portions comprise a flowable material, flowed around proximal and distal ends of the medial portion, respectively.

31. The aneurysm treatment device of claim 30 wherein the flowable material comprises urethane.

32. The aneurysm treatment device of claim 29 wherein the fabric material forms an expandable braid.

33. The aneurysm treatment device of claim 29 wherein the fabric material forms an expandable mesh.

34. The aneurysm treatment device of claim 29 wherein the medial portion terminates in substantially constant diameter, unfolded, proximal and distal ends.

35. The aneurysm treatment device of claim 34 wherein the proximal and distal ends are covered by the thin material.

36. The aneurysm treatment device of claim 35 wherein the thin material forming the proximal portion has an outer diameter that tapers proximally.